

**AMENDMENTS TO THE CLAIMS**

This listing of claims will replace all prior versions, and listings of claims in the application:

Claims 1-13. (Canceled)

14. (Currently Amended) A detection ~~Detection~~ method, comprising:  
detecting of a molecular recognition reaction between a first molecule fixed on a support and a second molecule present in a solution to be tested, without labeling the first and second molecule, in which the detection is made by a photothermal method.

15. (Currently Amended) The detection ~~Detection~~ method, without labelling, of a molecular recognition reaction according to Claim 14, which is a hybridization reaction of nucleic acids ~~consisting of the following steps~~ said method comprising:  
[[ - ]] ~~fixation~~ fixing of the first nucleic acid molecule on a solid support,  
[[ - ]] contacting of the first nucleic acid molecule fixed on the solid support with a solution to be tested suspected of containing the second nucleic acid molecule, ~~this latter~~ said second molecule being capable of being hybridized with said first molecule, the contacting being carried out under conditions ~~favourable~~ favorable for said hybridization,  
[[ - ]] washing of the solid support to isolate a detection sample formed from said first molecule fixed on the support and possibly said second molecule hybridized on said first molecule, and  
[[ - ]] measuring the absorption of the sample by a photothermal method.

16. (Currently Amended) The detection method ~~Method~~ according to Claim 14 in which the photothermal method is a thermal lens method.

17. (Currently Amended) The detection method ~~Method~~ according to Claim 15 in which the photothermal method is a thermal lens method.

18. (Currently Amended) The detection method ~~Method~~ according to Claim 14 in which the photothermal method is a method of photothermal deflection in which the sample is illuminated by a pump beam and the absorption of the pump beam by a sample is detected by the refraction or the reflection of a probe beam.

19. (Currently Amended) The detection method ~~Method~~ according to Claim 15 in which the photothermal method is a method of photothermal deflection in which the sample is illuminated by a pump beam and the absorption of the pump beam by a sample is detected by the refraction or the reflection of a probe beam.

20. (Currently Amended) The detection method ~~Method~~ according to Claim 18 in which the probe and pump beams cross each other.

21. (Currently Amended) The detection method ~~Method~~ according to Claim 19 in which the probe and pump beams cross each other.

22. (Currently Amended) The detection method ~~Method~~ according to Claim 18 in which the probe and pump beams are in a transverse configuration or in an approximately collinear configuration.

23. (Currently Amended) The detection method ~~Method~~ according to Claim 19 in which the probe and pump beams are in a transverse configuration or in an approximately collinear configuration.

24. (Currently Amended) The detection method ~~Method~~ according to Claim 18 in which the pump beam is chosen from a pulsed laser, a continuous intensity modulated laser or polychromatic light.

25. (Currently Amended) The detection method ~~Method~~ according to Claim 18 in which the refraction or the reflection of the probe beam is detected by means of multi-element photodiode or by means of a simple photodiode receiving only part of the probe beam.

26. (Currently Amended) The detection method ~~Method~~ according to Claim 24 in which the refraction or the reflection of the probe beam is detected by means of multi-element photodiode or by means of a simple photodiode receiving only part of the probe beam.

27. (Currently Amended) The detection method ~~Method~~ according to Claim 18 in which the pump beam is a beam from a laser chosen from a continuous argon laser at 275 nm, a quadrupled YAG laser with a wavelength of 266 nm or a polychromatic light.

28. (Currently Amended) The detection method ~~Method~~ according to Claim 18 in which the probe beam has a wavelength that is not absorbed by the substrate nor the present molecules.

29. (Currently Amended) The detection method ~~Method~~ according to Claim 16 in which an incident beam is used, said beam being a beam from a laser chosen from a continuous argon laser at 275 nm, a quadrupled YAG laser with a wavelength of 266 nm or polychromatic light.

30. (Currently Amended) The detection method ~~Method~~ according to Claim 17, comprising in addition a step for comparing the measurement of absorption of the sample with that of a control sample.

31. (Currently Amended) ~~Use of a~~ The method according to Claim 14 ~~for a test, a diagnosis or a detection of~~ in which hybridization of nucleic acids is detected.

32. (Currently Amended) ~~Use of a~~ The method according to Claim 15 ~~for a test, a diagnosis or a detection of~~ in which hybridization of nucleic acids is detected.

33. (Currently Amended) The detection method ~~Method~~ according to Claim 19 in which the pump beam is chosen from a pulsed laser, a continuous intensity modulated laser or polychromatic light.

34. (Currently Amended) The detection method ~~Method~~ according to Claim 19 in which the refraction or the reflection of the probe beam is detected by means of multi-element photodiode or by means of a simple photodiode receiving only part of the probe beam.

35. (Currently Amended) The detection method ~~Method~~ according to Claim 33 in which the pump beam is chosen from a pulsed laser, a continuous intensity modulated laser or polychromatic light.

36. (Currently Amended) The detection method ~~Method~~ according to Claim 19 in which the pump beam is a beam from a laser chosen from a continuous argon laser at 275 nm, a quadrupled YAG laser with a wavelength of 266 nm or a polychromatic light.

37. (Currently Amended) The detection method ~~Method~~ according to Claim 19 in which the probe beam has a wavelength that is not absorbed by the substrate nor the present molecules.

38. (Currently Amended) ~~Use of a~~ The method according to Claim 24 ~~for a test, a diagnosis or a detection of in which~~ hybridization of nucleic acids is detected.

39. (New) A detection method, comprising:

detecting a molecular recognition reaction between a first molecule fixed on a support and a second molecule present in a solution to be tested, without labeling said first and said second molecule, in which the detection is made by a photothermal method;

wherein said molecular recognition reaction is a hybridization reaction of nucleic acids, said method comprising:

fixing of the first nucleic acid molecule on a solid support;

contacting of the first nucleic acid molecule fixed on the solid support with a solution to be tested suspected of containing the second nucleic acid molecule, said second molecule

being capable of being hybridized with said first molecule, the contacting being carried out under conditions favorable for said hybridization;

washing of the solid support to isolate a detection sample formed from said first molecule fixed on the support and possibly said second molecule hybridized on said first molecule; and

measuring the absorption of the sample by a photothermal method.

**BASIS FOR THE AMENDMENT**

The Claims have been amended to better conform to accepted U.S. claim format and as supported at page 1, lines 1-4 at page 2, lines 25-27 and by the Examples.

New Claim 39 is supported by Claims 14 and 15 as originally filed.

No new matter is believed to have been added by entry of this amendment. Entry and favorable reconsideration are respectfully requested.

Upon entry of this amendment Claims 14-39 will now be active in this application.

### **INTERVIEW SUMMARY**

Applicants wish to thank Examiner Fredman for the helpful and courteous discussion with Applicants' Representative on March 25, 2004. During this discussion it was noted that the amended Claims may overcome the currently outstanding rejections over Adelhelm et al. It was noted that the claims have been renumbered by the Patent Office because they did not receive original Claim 14. This appears to have been a scanning error at the Patent Office. In any case, Claim 14 was cancelled by the Preliminary Amendment filed March 27, 2002.

In addition, the Examiner has not rejected Claims 15, 17, 19, 21, 27, 29, 30 and 34-37 (renumbered) over Adelhelm et al. Accordingly, Applicants have added an additional independent claim that combines the limitations of Claim 14 (renumbered) and Claim 15 (renumbered).